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(71) Applicant (for all designated States except US): E.I.  
DUPONT DE NEMOURS AND COMPANY [US/US];  
1007 MARKET STREET, WILMINGTON, Delaware  
19898 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): RAO, Velliyur,  
Nott, Mallikarjuna [US/US]; 1 Georgetown Avenue,  
Wilmington, Delaware 19809 (US). SIEVERT, Allen,  
Capron [US/US]; 215 Rhett Lane, Elkton, Maryland  
21921 (US).

(74) Agent: HEISER, David, E.; E. I. DU PONT DE  
NEMOURS AND COMPANY, LEGAL PATENT  
RECORDS CENTER, 4417 Lancaster Pike, Wilmington,  
Delaware 19805 (US).

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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3,3-HEXAFLUOROPROPANE AND AT LEAST ONE OF  
1,1,1,2,3,3-HEXAFLUOROPROPANE AND 1,1,1,2,3,3,3-HEPTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of 1,1,1,3,3,3-hexafluoropropane (HFC-236fa) and at least one 1,1,1,2,3,3-  
hexafluoropropane (HFC-236ea) and 1,1,1,2,3,3,3-heptafluoropropane (HFC-227ea). The process involves (a) reacting HF, Cl<sub>2</sub>, and  
at least one halopropene of the formula CX<sub>3</sub>CCl=CX<sub>2</sub> (where each X is independently F or Cl) to produce a product including  
both CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub>; (b) reacting CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub> produced in (a) with hydrogen to produce a  
product comprising CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at least one compound selected from the group consisting of CHF<sub>2</sub>CHF<sub>2</sub>CF<sub>3</sub>, and CF<sub>3</sub>CHF<sub>2</sub>CF<sub>3</sub>;  
and (c) recovering from the product produced in (b), CF<sub>3</sub>CH<sub>2</sub>CF<sub>3</sub> and at least one compound selected from the group consisting  
of CHF<sub>2</sub>CHF<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CHF<sub>2</sub>CF<sub>3</sub>. In (a), the CF<sub>3</sub>CCl<sub>2</sub>CF<sub>3</sub> and CF<sub>3</sub>CClFCClF<sub>2</sub> are produced in the presence of a chlorofluorina-  
tion catalyst including a ZnCr<sub>2</sub>O<sub>4</sub>/crystalline α-chromium oxide composition, a ZnCr<sub>2</sub>O<sub>4</sub>/crystalline α-chromium oxide composition  
which has been treated with a fluorinating agent, a zinc halide/α-chromium oxide composition and/or a zinc halide/α-chromium  
oxide composition which has been treated with a fluorinating agent.



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